

Based on Applicants' review of the Office Action, Applicants believe that there may be some disagreement as to how the system disclosed by Margolus works. Thus, Applicants provided below a description of Applicants' understanding of the way the system of Margolus operates. If the Examiner disagrees with Applicants' understanding, Applicants respectfully request the Examiner to explain his understanding of Margolus.

1. Discussion of Margolus

Margolus is directed to history preservation in a computer storage system whereby previous versions of documents can be retained in a storage system. Margolus describes techniques for retaining previous versions of documents. A first technique, described at ¶¶0096-0104 is referred to as version retention and a second technique, described at ¶¶0105-0110 is referred to as snapshot retention.

The "version retention" technique provides for retention of a version of a document that is modified or requested to be deleted (¶100). At the moment a version is superseded (e.g., modified or requested to be deleted), an expiration time is assigned to the version such that the version cannot be deleted before the expiration time (¶100, lines 1-2). A historical version is thus retained on the storage system at least until the expiration time (¶100, lines 3-4).

In the "snapshot retention" technique, illustrated in FIG. 3, a snapshot of the file system is periodically created and assigned an expiration time. For example, the object store begins its operation at time t0 (¶100, lines 4-5). After time t0, objects begin to be stored in the file system (FIG. 3, ¶108). During the period between time t0 and t1, objects a1, b1, c1 and d1 are stored in the file system (FIG. 3). A snapshot of the file system is created at time t1. However, prior to the time the snapshot is created, object d1 is superseded by a new version d2, at which time version d2 is saved and object d1 is deleted (¶108). Later, object d2 is superseded by a new version d3, at which time version d3 is saved and object d3 is deleted. Thus, objects are deleted as soon as a new version is created (¶108, lines 11-13). Indeed, Margolus states, "[i]f we're following a snapshotting

version retention policy, then the rest of the versions of d can be deleted as soon as they are superseded.” (§10108)

Thus, when using the snapshot technique, objects are not assigned an initial expiration period. That is, when an object (e.g., d1) is created, it can be modified or deleted at any time (§108, lines 11-13). There is no retention period assigned to the object to prevent it from being deleted or modified. For example, in Figure 3, when object d2 is created, object d1 is deleted. Similarly, when object d3 is created, object d2 is deleted. There is simply no retention period that prevents a document from being modified or deleted.

2. The Claims Patentably Distinguish Over Margolus

a. Claim 1

Claim 1 recites:

A method of processing data in a computer system comprising at least one host and at least one storage system, the method comprising acts of:

(A) sending to the at least one storage system, from the at least one host, a request to store a unit of data, the request including a retention period for the unit of data;

(B) after expiration of at least some of the retention period, determining if a specified event has occurred;

(C) when it is determined in the act (B) that the specified event has not occurred, extending the retention period for the unit of data; and

(D) repeating the acts (B) and (C) until it is determined in the act (B) that the specified event has occurred.

Margolus fails to disclose or suggest sending a request to store a unit of data includes a retention period for the unit of data, as required by claim 1. The Office Action asserts that Margolus teaches this limitation in Figure 3. In particular, the Office Action states that the objects (a, b, c, and d) of Margolus are stored at time t0 and are retained until time t1. Applicants respectfully disagree. As discussed above, time t0 represents the beginning of the file store, not the time that objects are stored. Rather, objects c1, and d1 are stored some time between times t0 and t1. Next, object a1 is stored, then object

d2, then object b1, etc. In addition, these objects are not assigned a retention period. Rather, they are subject to deletion at any time. For example, when object d2 is created, object d1 is immediately deleted (§108).

Moreover, even if it is assumed that objects a1, b1, c1, and d1 are assigned retention periods, Margolus does not teach or suggest sending a request to store an object that specifies a retention period. Margolus does not even discuss sending requests to the storage system to store objects, let alone sending a request to store an object specifies a retention period for the object.

Furthermore, Margolus fails to disclose or suggest determining that a specified event has occurred after expiration of at least some of the retention period for a unit of data, as required by claim 1. The Office Action asserts that Margolus discloses this limitation in §108, arguing that an “event” is an object being superseded and that the system determines whether the “event” has occurred at time t1 when the snapshot of the file system is created. Applicants respectfully disagree that the system of Margolus determines whether an event has occurred each time a snapshot is created.

As illustrated in FIG. 3 of Margolus, the system creates snapshots of the file store at regular intervals (T1, T2, T3, etc.). These snapshots are taken regardless of whether an object has been superseded, as the system snapshots whichever objects are present in the file store when a snapshot occurs. No determination is made with respect to which versions are present in the system (§108).

In addition, Margolus fails to disclose or suggest extending the retention period for the unit of data when it is determined that the event has not occurred, as required by claim 1. The Office Action asserts that Margolus discloses this limitation with respect to Margolus’ snapshots. In particular, the Office Action asserts that the retention period for an object is extended each time a snapshot of the file system is created. Applicants respectfully disagree.

Margolus states that when a snapshot is taken, an expiration time is set for the snapshot. For example, snapshot one is taken at time T1 and is set to expire within one day (§108). When snapshot two is taken at time T2, snapshot two is set to expire within

one week (§108). Setting an expiration period for snapshot two does not extend the retention period for snapshot one. Rather, each snapshot is assigned an expiration period when it is created and this expiration period expires upon reaching its respective expiration time (§108). Thus, because snapshot two includes different information from snapshot one (as it represents the object versions in the system at different points in time) creating an expiration period for snapshot two does not extend the expiration period for snapshot one because the data in snapshot one still expires at the end of the snapshot one expiration time. As should be clear from the foregoing, claim 1 patentably distinguishes over Margolus. Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn.

Claims 2-6 depend from claim 1 and are patentable for at least the same reasons. Therefore, Applicants respectfully request that the rejections of these claims be withdrawn.

b. Claim 7

Claim 7 recites:

A method of ensuring that a unit of data, stored on a computer system, is retained until a specified period after the occurrence of an event, the computer system comprising at least one host and at least one storage system that stores the unit of data, the method comprising acts of:

(A) establishing an initial retention period for the unit of data, wherein the initial retention period is less than or equal to the specified period;

(B) after the expiration of at least some of the initial retention period, determining whether the specified event has occurred;

(C) when it is determined in the act (B) that the specified event has not occurred, performing acts of:

(C1) extending the retention period for the unit of data for an extended period that is less than or equal to the specified period; and

(C2) after the expiration of at least some of the extended retention period, determining whether the specified event has occurred and when the specified event has not occurred, returning to the act (C1), and when the specified event has occurred, proceeding to the act (D); and

(D) when it is determined in either of the acts (B) or (C2) that the specified event has occurred at a time, extending the retention period so that the retention period expires the specified period after the time at which the event occurred.

As should be appreciated from the foregoing, claim 7 patentably distinguishes over Margolus because Margolus fails to teach or suggest, “establishing an initial retention period for the unit of data, wherein the initial retention period is less than or equal to the specified period.” Rather, as discussed above, in Margolus, when an object is stored, it is not assigned an expiration time. That is, a version of an object may be deleted or modified until a snapshot is created.

Further, as discussed above, Margolus does not disclose or suggest, “after the expiration of at least some of the initial retention period, determining whether the specified event has occurred.” Rather, in Margolus a snapshot of an object is created at a regular interval, regardless of whether an event has occurred.

Moreover, Margolus does not disclose or suggest, “extending the retention period for the unit of data for an extended period that is less than or equal to the specified period,” as in the system of Margolus the expiration time for a snapshot is never extended.

Thus, claim 7 patentably distinguishes over Margolus. Accordingly, it is respectfully requested that the rejection of claim 7 be withdrawn.

c. Claim 8

Claim 8 is directed to a computer readable medium encoded with instructions that, when executed, perform a method substantially similar to the method of claim 1. Accordingly, withdrawal of the rejections of claim 8, and claims 9-13 that depend therefrom, is respectfully requested for at least the same reasons as claim 1.

d. Claim 14

Claim 14 is directed to a computer readable medium encoded with instructions that, when executed, perform a method substantially similar to the method of claim 7.

Accordingly, withdrawal of the rejection of claim 14 is respectfully requested for at least the same reasons as claim 7.

e. Claim 15

Claim 15 recites:

A host computer for use in a computer system that includes the host computer and at least one storage system, the host computer comprising:
first means for sending to the at least one storage system, a request to store a unit of data, the request including a retention period for the unit of data;
second means for determining, after expiration of at least some of the retention period, if a specified event has occurred;
third means for extending the retention period for the unit of data when it is determined that the specified event has not occurred; and
fourth means for repeatedly instructing the second and third means to determine whether the specified event has occurred and for extending the retention period until it is determined that the specified event has occurred.

Claim 15 patentably distinguishes over Margolus for at least the reasons discussed above. Accordingly, it is respectfully requested that the rejection of claim 15 be withdrawn.

Claims 16-21 depend from claim 15 and are patentable for at least the same reasons. Therefore, Applicants respectfully request that the rejections of these claims be withdrawn.

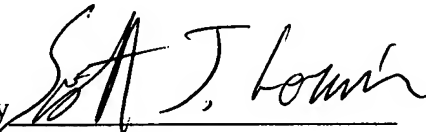
CONCLUSION

In view of the foregoing remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below to discuss any outstanding issues relating to the allowability of the application.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

By 

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